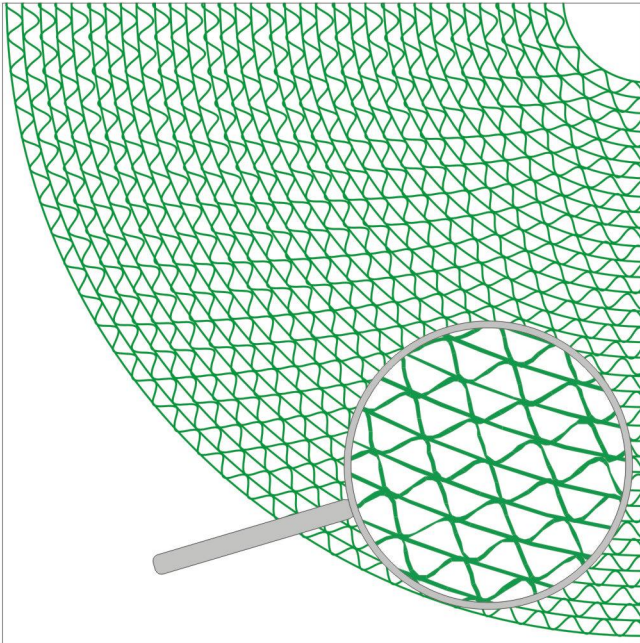


SECO



Desiccant-/enthalpy regenerator
Installation, initial operation
and maintenance

The SECO rotor



The SECO rotor is a heat exchanger which is also capable of transferring moisture with the same efficiency. These rotors are also used for drying operations.

The basic material takes the form of cellulose which is impregnated with lithium chloride using a patented process. The material has a biocidal action and expands only slightly under the effects of moisture. The germicidal action of lithium chloride guarantees a high standard of hygiene.

The matrix material cellulose is a natural product, which has a natural shrinkage and extensibility. Thus temporary irregularities may occur. This effect has no influence on function and stability of the rotor matrix.

The casing and the housing are made of seawaterresistant aluminium.

Modes of operation / Speed

Used as an enthalpy exchanger (efficiency for moisture and temperature identical), the rotor operates at 10 rpm. A speed of 20 rph (revolutions per hour) is selected for use of the appliance as a sorption exchanger or as a dryer. Continuous rotation of the storage mass is necessary to achieve optimum performance.

Air routing

The SECO must be operated on the countercurrent-flow principle in order to achieve its full efficiency and to avoid fouling of the storage mass. The flows of air must be filtered before entering the storage mass.

Air velocity

The SECO achieves its best performance at an air velocity of **1.5 to 2.0 m/s**. For both air flows, this velocity relates to the unobstructed front surface area of the rotor onto which flow occurs.

Heating-up of regeneration air

The SECO has been developed for regeneration temperatures of a maximum of 70°C. Air temperature and/or storage mass temperature must not exceed 70°C for more than a short time. The air-heater must be installed at an adequate distance from the sorption rotor, in order to prevent overheating of the cellulose matrix. The fans must always run simultaneously with the air-heater!

Air-flow moisture content

In order to ensure dehumidification efficiency during drying operation, the regeneration air must have a lower relative humidity than the process air. The SECO must never be operated with supersaturated air or with free water in the operating air (no droplet formation).

Final in-plant inspection

Final inspection at the manufacturer's works is confirmed by means of a yellow sticker which is affixed to the inner side of the inspection hatch. This certifies, inter alia, the completeness of the shipment (including in particular the control system and its components). Please quote the corresponding check number and date, plus the SECO size code and number, if you have any queries in this respect. The SECO size code and number can be found on the model plate, which is affixed to the inspection hatch. The SECO number is also additionally stamped into the frame of the inspection hatch.

General preconditions for installation

The substrate must be level, in order that the SECO can be installed without stresses occurring. No external forces, such as those present in connecting ducts, for instance, may be transmitted into the frame of the SECO. It must be ensured that the approach flow to the SECO is uniform and straight. The rotor in the appliance must be accessible, in order to permit the performance of inspection work. An unobstructed space of not less than 400 mm is necessary in the case of split SECO rotors.

Positioning

The SECO must be installed on a surface which is as level (horizontal) as possible. The precise installation position is determined by the marking "ABLUFT" ("Exhaust Air"). This marking on the SECO housing indicates the exhaust air entry side. It should be noted in the case of horizontal rotors that a surrounding mounting frame including a centre bar is necessary. A corresponding diagram can be obtained from the manufacturer.

Oblique approach flow to the SECO should be avoided, since this could result in the storage mass being driven round by the flow of air. Guide (baffle) vanes must be installed in front of the inlet if necessary.

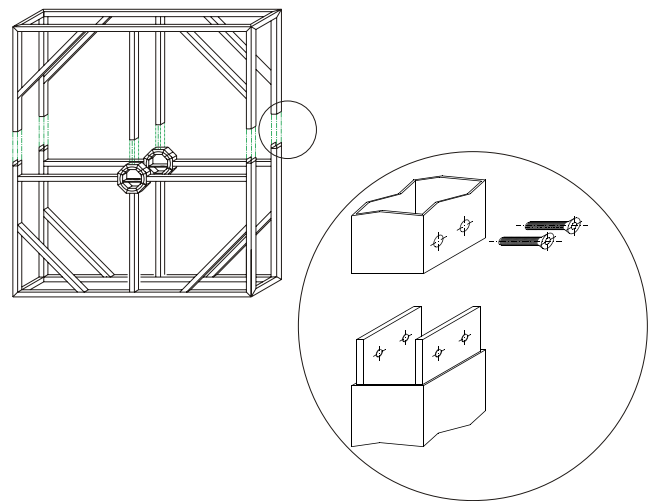
SECO unit sizes

The sizes of the SECO rotors are determined by the frame dimension.

Split type rotors

Above a diameter of 1800 mm the wheels are divided, spacer disks are installed.

Frames are divided above a frame size of 2500 mm. The upper section of the housing is lowered into position after installation of the storage mass segments.



Setting-up

Setting up should in all cases be performed only by Klingenburg or by specially trained staff.

Connection of ducts

No forces may be transmitted into the SECO rotors via the duct connections.

The use of drilling screws is recommended for connection of the ducts.

The SECO must be accessible within the plant arrangement, in order to permit the performance of any maintenance / servicing work necessary.

SECO rotors are designed for countercurrent flow operation (incoming air / exhaust air). Please consult us if this is not the case in your plant arrangement.

Significant performance losses are incurred if the appliance is used for concurrent flow operation. There is, in addition, also a greater danger of fouling.

Commissioning

It must be ensured before starting the machine that there are no objects present which could obstruct the free-running of the storage mass.

Drive motor

The drive motors used for the SECO rotors take the form of three-phase gear motors with independently driven cooling fans designed for 380/200V operation and equipped with thermal cut-out contacts which react at 140°C. These motors must be operated in a delta circuit configuration with the KS4/KS7 control units and with the thermal cut-out contacts active. No guarantee claims can be accepted if this provision is not implemented! The motor can be repositioned to another corner of the unit without difficulty if it becomes apparent during installation that the original motor position is unsuitable. Under normal operating circumstances the motor does not require any maintenance (life-long grease lubricated gearing).

Control system

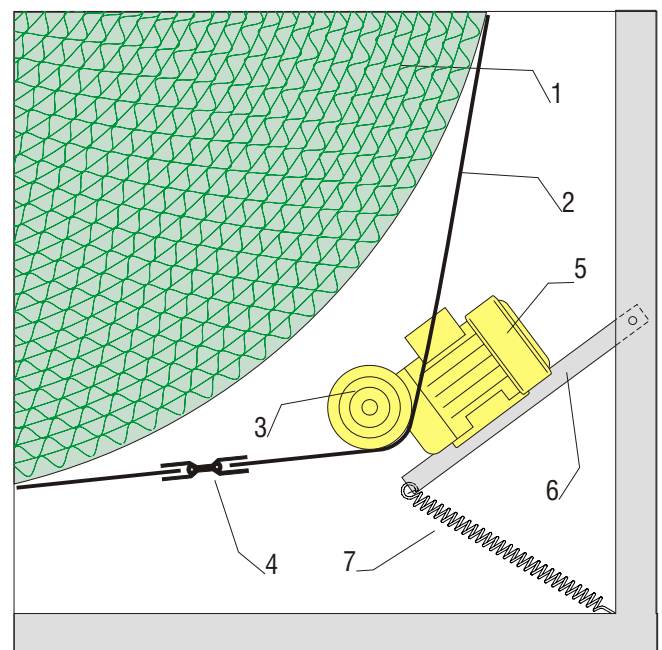
Two control unit types are available:

- The KS4 = 400 Watt for rotor diameters of less than 3760 mm
- The KS7 = 700 Watt for rotor diameters of 3760 mm or greater.

Please see the corresponding control unit instructions (supplied with the control unit).

Drive belt

The drive belt bears the marking SPZ or SPA and is commercially available under the designation "endless drive belts". Articulated connectors are used as the connecting elements. It is advisable to check the tensioning of the drive belt at certain intervals, since the belt is subject to natural elongation and this natural stretching may exceed the scope of the belt tensioning system. This should be adhered to particularly strictly during the first 400 hours of operation. The drive belt must be shortened if drive belt tensioning is too slack and correct driving of the storage mass is no longer assured.



- | | |
|----------------------|---------------|
| 1 Rotor wheel | 5 Motor |
| 2 V belt | 6 Motor frame |
| 3 V belt pulley | 7 Spring |
| 4 Articulated joiner | |



Seals

The brush-type seals on the storage mass are adjusted at the manufacturer's works and do not need adjustment by the customer.

Ball bearings

The ball bearings installed are of low-maintenance type and are designed for up to 100,000 operating hours. Maintenance is not necessary under normal operating conditions.

Cleaning

The rotors can be cleaned off using compressed air. The jet of air should be directed at the storage mass at a right angle for this purpose. Cleaning using liquids of any kind is not possible. Filters must be installed to keep the level of fouling low from the start. Cleaning using any kind of liquid will result in damage to or destruction of the rotor.

Important!

The mechanical and electrical components should be inspected regularly during the first few days of operation.

Special notes

If it is not operated in bypass configuration, the rotor must remain continuously in slow-speed rotation or be partially rotated at intervals by means of an interval switching circuit. This prevents the rotor absorbing excessive moisture and/or becoming excessively fouled on one side only.

The system's high self-cleaning action can be preserved only provided the above measures are adhered to (failure to do this will result in invalidity of the guarantee). Particularly during the starting-up phase, it is important to ensure that the rotor is ready for operation as soon as the fans start to run.

The clock circuit is activated automatically if the rotor has not received a run command. This is actively indicated on the control unit display with a safety routine.

We recommend that alarms issued by the control unit be additionally indicated by means of an acoustic signal (available as an optional accessory). Please also note the separate description for the control unit.

Inactivity of the storage mass can result in it absorbing excessive moisture. The lithium chloride impregnation prevents escape of lithium chloride provided the unit is operated correctly. The material contains an inhibitor and does not attack metals.

The following information is affixed to the SECO housing:

Important!

It must be ensured that mains power is ON, that the controller is set enabled and that control can be performed only via the controller signal or via the keyboard both during start-up and throughout operating time of the ventilation system. There is otherwise a danger of over-moisturizing of the storage mass.



WARNING

The safety routine incorporated into the controller causes automatic re-starting of the frequency converter - and therefore of the drive system - after the expiry of an internally set cycle time. It must be ensured that no danger to any persons can occur in case of an automatic re-start.

We reserve the right to introduce technical changes and alterations without prior notice / 11-2008



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